REMARKS

No claims have been amended. Claims 1-16 remain pending in the application.

Allowable subject matter

Applicant appreciates the indication that claims 3, 4, 6, 7, 11, 12, 14 and 15 contain allowable subject matter. Applicant has not amended claims 3, 4, 6, 7, 11, 12, 14 and 15 at this time, however, because for the reasons given below, applicant believes that independent claims 1 and 9, from which claims 3, 4, 6, 7, 11, 12, 14 and 15 ultimately depend, are allowable.

Rejection under 35 U.S.C. § 103

Claims 1, 2, 5, 8-10, 13 and 16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,453,125 to Krogh (hereafter "Krogh") in view of U.S. Patent No. 4,022,446 to Smith, Jr. (hereafter "Smith"). Applicant respectfully traverses this rejection for at least the following reasons.

Claim 1

The wafer treatment system of claim 1 comprises walls surrounding a closed space enclosing a wafer and having a hollow sealing a gas in the walls. The system also includes a pressure-regulating unit connecting to the hollow for regulating pressure in the hollow. Krogh and Smith do not suggest these features.

Krogh does not disclose a pressure-regulating unit connecting to a hollow of the walls of an apparatus for regulating pressure in the hollow. Krogh discloses in Fig. 1 a plasma chamber 1 having a cylindrical sidewall 9 which is hollow to accommodate cooling liquid constantly flowing through chamber cooling means 5 and magnet cooling means 6 (col. 5, lines 33-36). As correctly recognized in the Office Action, Krogh does not teach the pressure regulating unit of the claims. The Office Action relies on Smith for allegedly teaching a pressure regulating unit, and states it would have been obvious to modify the wall surrounding the vacuum chamber of Krogh to include the pressure regulating means (compressor 33) of Smith. Applicant respectfully disagrees.

One skilled in the art would not have modified the Krogh apparatus to include the compressor 33 of Smith for regulating the pressure of the cooling liquid in cooling means 5 or

cooling means 6 of Krogh. Smith discloses that hot gases enter the upper end of a tube and flow down through a valve 31 through a heat exchanger 32 and through compressor 33 which discharges to the lower end of a tube 34 leading to the lower end of a work piece 4 (col. 3, lines 31-36). Smith further discloses that the end result is the removal of the hot gas from the upper hot gas zone at the upper end of the work piece 4 and the return of cold gas to the cool zone at the lower end of the work piece (col. 3, lines 46-50). Thus, the purpose of the compressor 33 in the Smith system is to aid in the cooling of a hot gas. Smith does not suggest using a compressor for regulating the pressure of a cooling liquid such as in the Krogh system. Moreover, the Krogh system provides for a continuous flow of cooling liquid. There is no suggestion of a need for a pressure regulating unit for the cooling liquid, much less a compressor that aids in the cooling of a hot gas.

Moreover, even if Krogh and Smith were combined, the combination would not meet the limitations of claim 1. Claim 1 requires a hollow sealing a gas in the walls, while Krogh discloses the hollows in sidewall 9 to contain a cooling liquid. Even if Krogh and Smith were combined, the combination would still include a cooling liquid within the walls, not a cooling gas.

Still further, the present invention as recited in claim 1 may provide advantages in allowing for the shortening of the time necessary for cooling down after a heat treatment process, an advantage not suggested by Krogh and Smith. Specifically, the apparatus of claim 1 may shorten the time necessary for the cool down process by means of adiabatic expansion of gas in the hollows of the walls.

Claim 9

Independent claim 9 is directed to a wafer heat treatment method and comprises processing a wafer, which is in a closed space surrounded by walls each having a hollow, and regulating the pressure in the hollows of the walls. As discussed above, Krogh and Smith fail to suggest that the pressure of the cooling liquid within the walls of the plasma chamber 1 of Smith should be regulated. Thus claim 9 is likewise patentable over Krogh and Smith.

Accordingly, for at least the reasons given above, applicant respectfully submits that claims 1 and 9, and claims 2, 5, 8, 10, 13 and 16 which ultimately depend therefrom, are

patentable over Krogh and Smith. Accordingly, applicant respectfully requests that the rejection of these claims under 35 U.S.C. § 103 be withdrawn.

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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